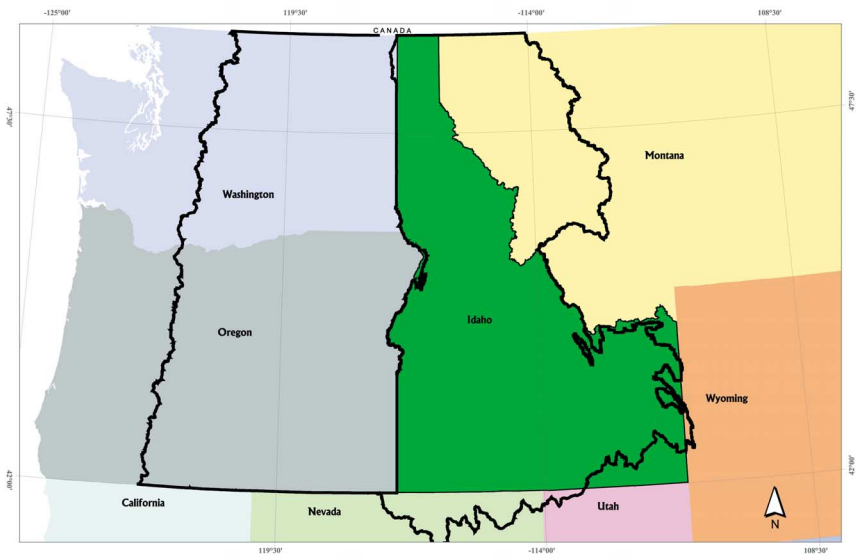
Overview of the State

The State of Idaho encompasses 82,677 square miles and is located in the upper Pacific Northwest range of the United States. Idaho is bounded by six states: Montana, Wyoming, Utah, Nevada, Oregon, and Washington. (See map below.) Its uppermost boundary is shared by the country of Canada. The eastern boundaries of the State are delineated by the Bitteroot mountain range, causing dominant westward watershed drainage.

State Boundaries



Population Changes from 1990 to 1999
(Statewide and in select counties)

	1990	1999	% Change	Pop. Change
Statewide	1,006,749	1,251,700	24%	244,951
Ada County	205,775	283,402	38%	77,627
Boise County	3,509	5,311	51%	1,802
Custer County	4,133	4,089	-1%	-44
Kootenai County	69,795	104,807	50%	35,012
Shoshone County	13,931	13,654	-2%	-277

The State lies in the Upper Columbia River Basin, a regional watershed delineated by the Columbia River system, to which most of the major rivers in the basin drain. The Columbia River flows to the Pacific at the borders of Oregon and Washington. Idaho has eight major river systems: Snake, Boise, Clearwater, Salmon, Coeur d'Alene, Pend Oreille, Kootenai, and Bear. Four of these rivers flow through the State, converge with the Snake River, and meet the Columbia River in eastern Oregon. The Bear River enters Idaho from Wyoming and flows southward into the Great Basin in Utah.

As depicted on the "Idaho Land Ownership" map (opposite page), the federal government is the largest "land owner," with over 65 percent of the land being managed by either the U.S. Department of Agriculture (U.S. Forest Service) or the U.S. Department of the Interior (Bureau of Land Management). The map also displays lands managed by Idaho, Indian tribal governments, the military, and the U.S. Department of Energy (Idaho National Engineering and Environmental Laboratory — INEEL).

The State's population increased by 24 percent between 1990 to 1999. (See the "Population Changes" table at left.) Ada County experienced the largest increase with 77,627 more people living in the county in 1999 than in 1990. This represents a 38-percent increase. However, the fastest growing county was Boise County, which saw its population grow by 1,802 people, or a 51-percent increase. The second largest, a 50-percent increase, was in Kootenai County.

Some counties experienced very little change, and a few had a decrease in population between 1990 and 1999. Shoshone County saw a two-percent reduction from 1990 to 1999, and Custer County lost one-percent of its population during the decade.

The following sections discuss environmental indicators to highlight conditions in the five basins, starting north in the Panhandle, and continuing southeast to the Upper Snake/Bear Valley.

Monitoring Our Environment

Various State and federal agencies, along with Native American tribes, monitor Idaho's water and air quality. Routine sampling and analysis identify trends in how clean our air and water is now and what might be expected in the future.

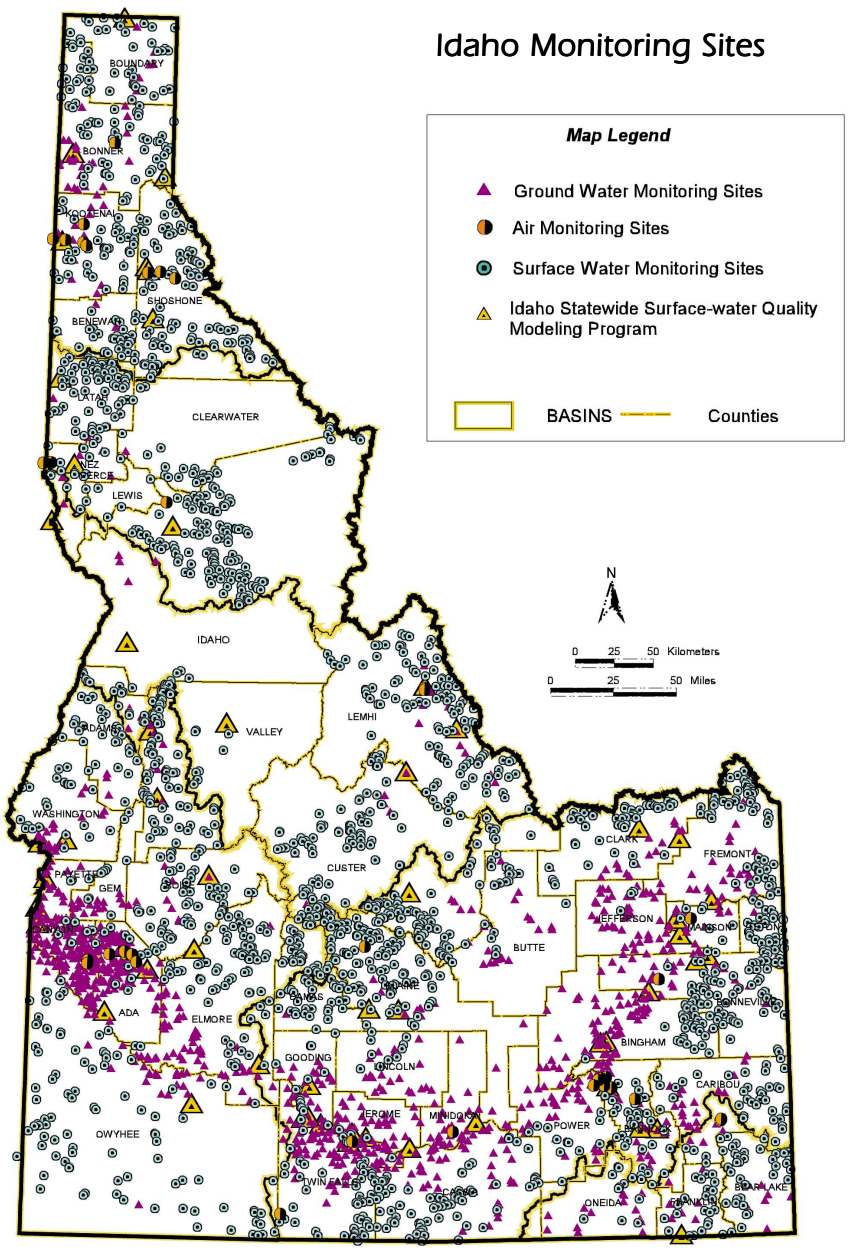
Sixty-seven air monitoring stations are located in 24 cities and on Indian reservations in Idaho. Each monitoring station is customized to evaluate certain pollutants that are known or expected to be present in that area. The monitoring locations have been determined by both population and air pollution sources.

In 1990, sampling began at 56 surface water sites: annually at five sites, biannually at 19 sites, and triannually at 32 sites. Each year, 25 of the 56 sites are sampled. From 1990 to 1996, chemical analyses of the samples were conducted. Beginning in 1996, biological analyses were added to the monitoring program. Between 1993 and 1996, over 2,000 sites on Idaho's rivers and streams have been monitored and assessed to determine if the waters can support the protection of species and human uses. Between 1997 and 2000, another 2,000 sites have been sampled and are in the process of being assessed.

The main sources of information on ground water quality are from a statewide monitoring network and routine monitoring of public drinking water systems. The statewide monitoring network consists of over 1,500 wells throughout the state. The network samples wells in areas that are proportionate to the population densities.

Of the 1,500 wells, 400 are sampled each year, so that all sites are sampled at least once every four years. In addition to the statewide monitoring network, ground water quality information is utilized from monitoring of the 2,000 drinking water systems, which rely on over 2,900 wells as their source.

Idaho Monitoring Sites



Air Quality

Generally, Idaho enjoys an abundance of clean air. However, during certain periods, Idaho citizens can be affected by significant air pollution from human and natural sources. Over the past three decades, Idaho, like much of the nation, has implemented controls on major industries, and significant reduction of the pollutants has occurred from such sources. Over the last two decades, Idaho and the Intermountain West have seen dramatic growth in urban population with increasing use of vehicles. In the Treasure Valley, and in the area from Spokane to Coeur d'Alene, monitoring is recording increasing amounts of air pollutants from transportation sources. In the Portneuf Valley, and in the Treasure Valley, pollutants called secondary aerosols from industrial and non-industrial sources can cause the formation of significant concentrations of particulate matter at certain times during the year. Across Idaho, smoke from agricultural burns, prescribed forest fires, and wild fires can cause the build-up of high concentrations of particulate matter in the summer and fall.

In the past, DEQ has recorded exceedances of the State and federal health-based standards for particulate matter, carbon monoxide, and sulfur dioxide. These exceedances have triggered federal planning requirements to address compliance with the appropriate standards in specific areas. DEQ has embarked upon an airshed management strategy for the entire State to ensure proactive protection of the public health at the local and State level prior to the initiation of any federal control strategies.

Surface Water

Activities throughout a watershed affect the quality of the water. Statewide, the predominant water quality problems are caused by runoff from land. Surface water concerns include human health and the biological integrity of rivers, lakes, reservoirs, and streams. Monitoring is the collection of biological and physical information designed to document water quality trends in a watershed. Idaho has approximately 120,000 miles of rivers and streams. Of that amount, approximately 16,742 miles have been monitored, 8,434 miles meet water quality standards, and 8,312 do not meet water quality standards.

Definition of Surface Water Pollutants of Concern

- **Sediment –** Natural materials such as sand, silt, and soil in excess of normal conditions that run off of land and into water systems. Excessive sedimentation may adversely impact native fisheries. Sedimentation may come from natural conditions or human activities.
- **Temperature –** Increased temperature levels in rivers, creeks, and lakes that may adversely impact native fisheries. Increased temperatures may come from natural conditions or human activities.
- **Nutrients** – Elements or compounds essential to living organisms such as nitrogen, phosphorous, and potassium. Excessive levels of nutrients may cause excessive plant growth in rivers, streams, and lakes, thereby reducing oxygen levels for aquatic species.

Minimum Stream Flow

A minimum stream flow, also called an instream flow, may be designated by the Idaho Water Resource Board to protect natural resources. This flow provides for a certain amount of water to remain in a stream, river, or lake to protect resources such as:

- fish habitat
- wildlife habitat
- aquatic life
- water quality
- navigation
- transportation
- recreation
- aesthetic beauty

At this time, the State has designated 76 minimum stream flows, which cover 670 stream miles, and four million acre feet of water in the Priest, Coeur d'Alene, and Payette Lakes. The basin maps in this report display where minimum flows have been designated.

Ground Water

Impacted Ground Water Areas Statewide

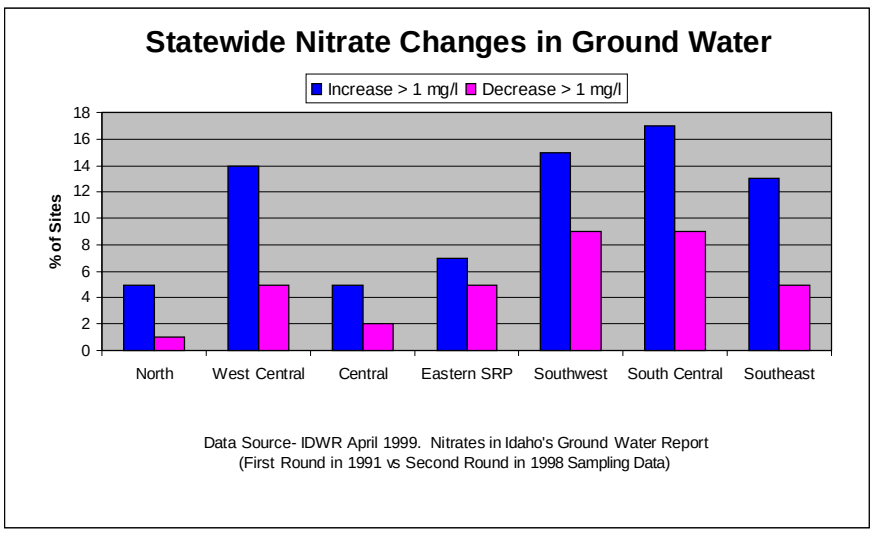
Beneficial uses of ground water in Idaho include drinking water, aquaculture, agriculture, mining, and industrial uses. Idaho relies upon ground water for drinking water supplies more than any other state in the nation.

In certain areas of Idaho, water management practices and land uses have adversely affected ground water quality. Ground water monitoring data collected over the past decade have identified areas of reduced ground water quality. Ground water quality information is categorized by the following contaminant groups: (For more information, see the 1998 Idaho Water Quality Status Report.)

- nitrates
- organic compounds
  - volatile and semi-volatile organic compounds
  - pesticides
- inorganic compounds
  - arsenic
  - fluoride
  - cadmium
  - selenium

Degraded ground water areas also include the Idaho National Engineering and Environmental Laboratory (INEEL), with ground water contaminated by radionuclides, inorganic compounds, and organic compounds.

Increased levels of nitrate in ground water are a concern statewide. The nitrate data shown in the bar chart below compare the statewide program's first-round sampling (1991-1994) to the second-round sampling (1995-1998). Of significance is that four of the areas had more than 10 percent of the sites with nitrate increases exceeding one milligram per liter (mg/l) (from the Idaho Department of Water Resources Technical Results Summary #1, April 1999).



Definition of Impacted Ground Water Areas and Sites

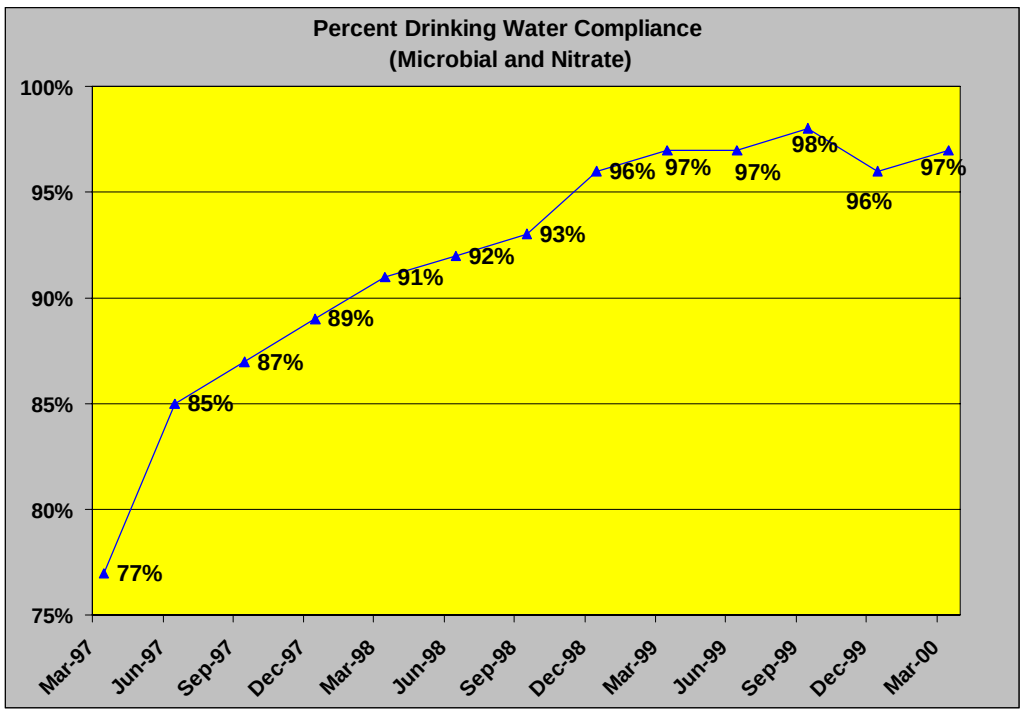
The following types of impacted ground water areas are shown on the basin maps and described in the associated sections:

- **Nitrate Priority Area:** Thirty-three nitrate priority areas have been identified throughout Idaho. These areas have significant ground water quality impacts due to nitrate contamination. These nitrate priority areas have greater than 25 percent of their ground water wells over 5 mg/l, which is one half of the drinking water standard.
- **Group 1 Sites:** Also shown on the maps are Group 1 sites. These sites are based on ground water data collected from single sample locations. These sites show sampling points for pollutants that have values greater than the drinking water standard or health advisory information (e.g., greater than 10 mg/l for nitrates). These sites indicate a contamination problem where regional or local ground water quality monitoring may be needed for additional characterization, source identification, and/or trend analysis.

Drinking Water

Approximately 96 percent of the State's drinking water comes from ground water sources. The remaining drinking water is supplied from surface water such as streams, rivers, and springs. Idaho's 2,085 public water systems serve approximately 995,000 Idahoans, representing over 80 percent of Idaho's population. The remainder of Idaho's population is served by private water wells, surface water, or other sources.

The percentage of Idaho's public water systems in compliance with microbial and nitrate contaminants has increased dramatically from 77 percent in March of 1997 to 97 percent in March of 2000. (See the "Percent Drinking Water Compliance" graph at right.) Most drinking water violations in Idaho occur in the smaller systems. Therefore, the population affected is also relatively small.



Endangered Species

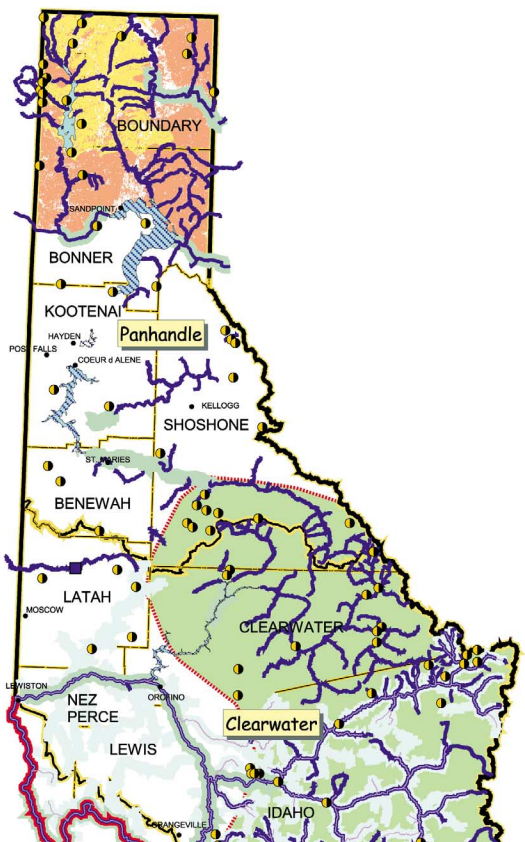
There are currently 22 mammals, birds, fish, plants, and invertebrates in Idaho listed as either threatened or endangered under the federal Endangered Species Act. Ten species are currently under active consideration for Endangered Species Act listing, and the Bald Eagle is under consideration for de-listing.

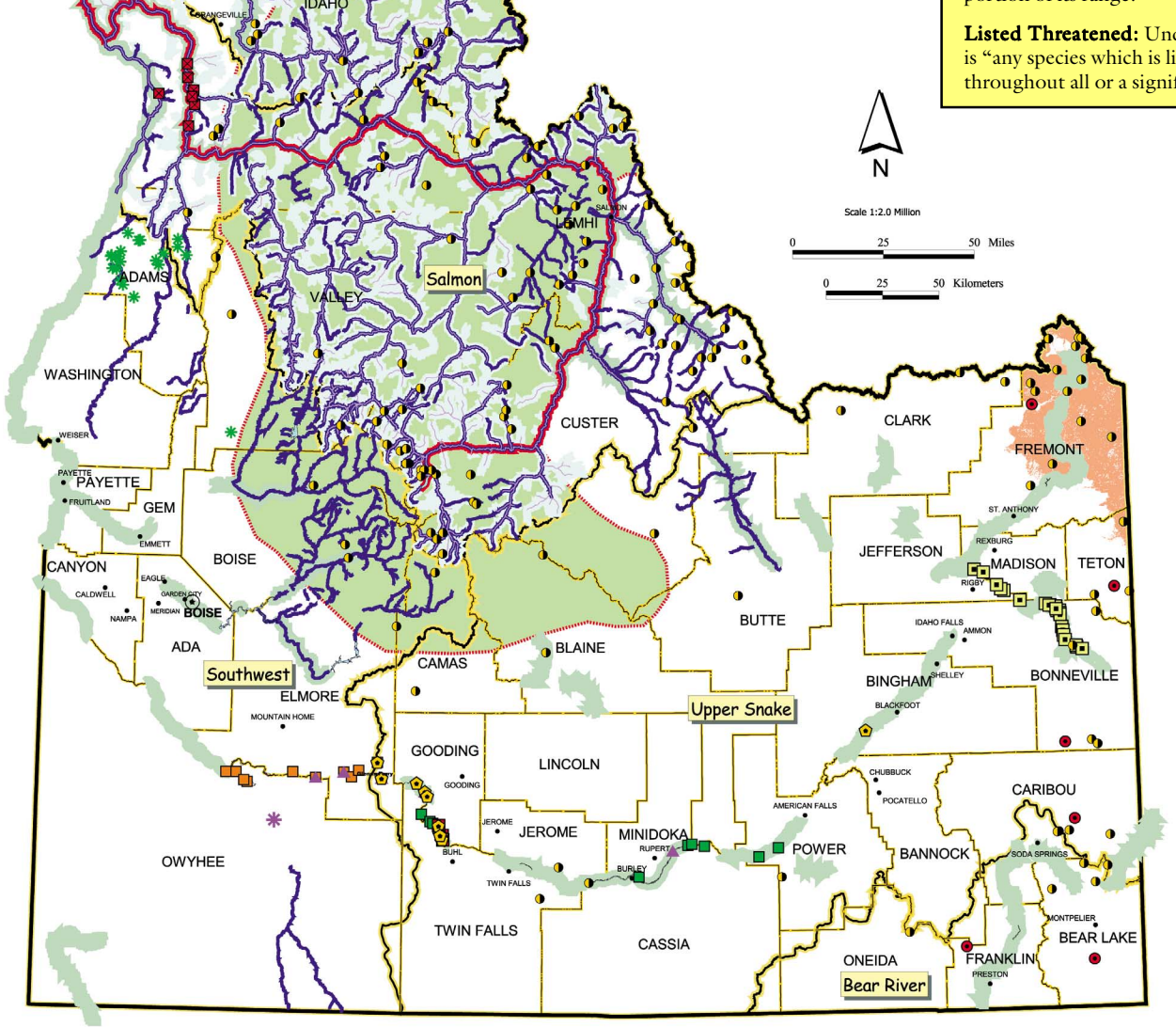
Threatened or Endangered Species in Idaho

	Endangered	Threatened
Mammals:		
Gray Wolf	E	
Selkirk Mountains Woodland Caribou	E	
Grizzly Bear		T
Northern Idaho Ground Squirrel		T
Canada Lynx		T
Birds:		
Bald Eagle		T
Peregrine Falcon - Recovered	Removed	
Whooping Crane	E	
Fish:		
Sockeye Salmon	E	
Spring/Summer Chinook Salmon		T
Fall Chinook Salmon		T
Kootenai River White Sturgeon	E	
Steelhead Trout		T
Bull Trout		T
Invertebrates:		
Utah Valvata Snail	E	
Snake River Physa Snail	E	
Bliss Rapids Snail		T
Idaho Springsnail	E	
Banbury Springs Lanx	E	
Bruneau Hot Spring Snail	E	
Plants:		
MacFarlane's Four-O'Clock		T
Water Howellia		T
Ute Ladies' Tresses		T

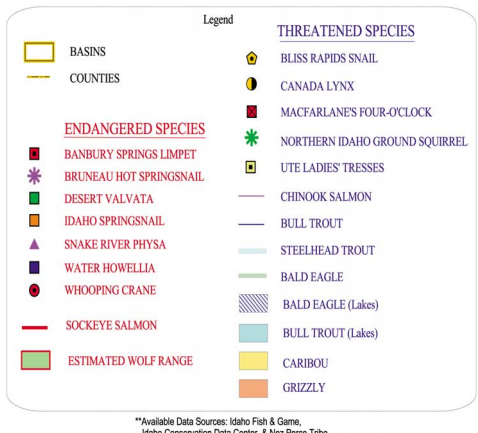
Listed Endangered: Under the federal Endangered Species Act, an endangered species is "any species which is in danger of extinction throughout all or a significant portion of its range."

Listed Threatened: Under the federal Endangered Species Act, a threatened species is "any species which is likely to become endangered within the foreseeable future throughout all or a significant portion of its range."





Endangered Species in Idaho



**Available Data Sources: Idaho Fish & Game, Idaho Conservation Data Center, & Nez Perce Tribe